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“Soft Log” and Concrete Canyons: Russian Urban Combat Logistics in Grozny

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...logistics make up as much as nine tenths of the business of war, and ...the mathematical problems involved in calculating the movements and supply of armies are...not unworthy of a Leibnitz or a Newton.

Martin Van Creveld¹

Although logistics is a major concern of warfare, comparatively little has been written about logistics when compared to writings about the tactical and strategic aspects of various wars. As a subset, very little has been written about logistical support of urban combat. One historic precept of urban combat logistics is that ammunition expenditure increases dramatically when fighting in cities. Recent Russian experience in fighting for the Chechen capital city of Grozny in January/February 1995 demonstrated that ammunition resupply was not the only problem. Demands on maintenance, supply, transport and medical support surpassed the capabilities of TO&E logistics units. Logistics demands were further increased by the requirement to provide humanitarian relief during the course of the fighting..

Russian tactics, techniques and operational concepts for urban combat were based on their broad experience in the Great Patriotic War [World War II]. There were three underlying assumptions that shaped the Soviet/Russian concept of future urban combat. First, urban combat would be fought in nearly "empty" foreign cities where the bulk of the local civilian populace had left. Second, that the enemy force in the city would be a conventional military force. Third, that the army would have a period of conventional combat to fully develop procedures and identify problems before it began that most-difficult mission-- fighting in a city. None of these assumptions proved correct in the fighting in Grozny. The civilians had no place to go and did not expect such extreme fighting, so they sat tight while the fighting engulfed the city. The Russian Army, as the sole government representative, was expected to provide food, shelter, clean water, sewage, electricity, and medical treatment to the civilians (who were citizens of the Russian Federation). The Russian TO&E combat service support units were barely able to sustain the Russian Army, let alone the large civilian populace, due to the increased demands of urban combat. It was beyond their capability and the civilians suffered. Eventually, the Russian Ministry of Emergency Situations (EMERCOM) helped restore these facilities.



January 1995. Russian troops and tanks make an assault river crossing over the Sunzha River in the city of Grozny.

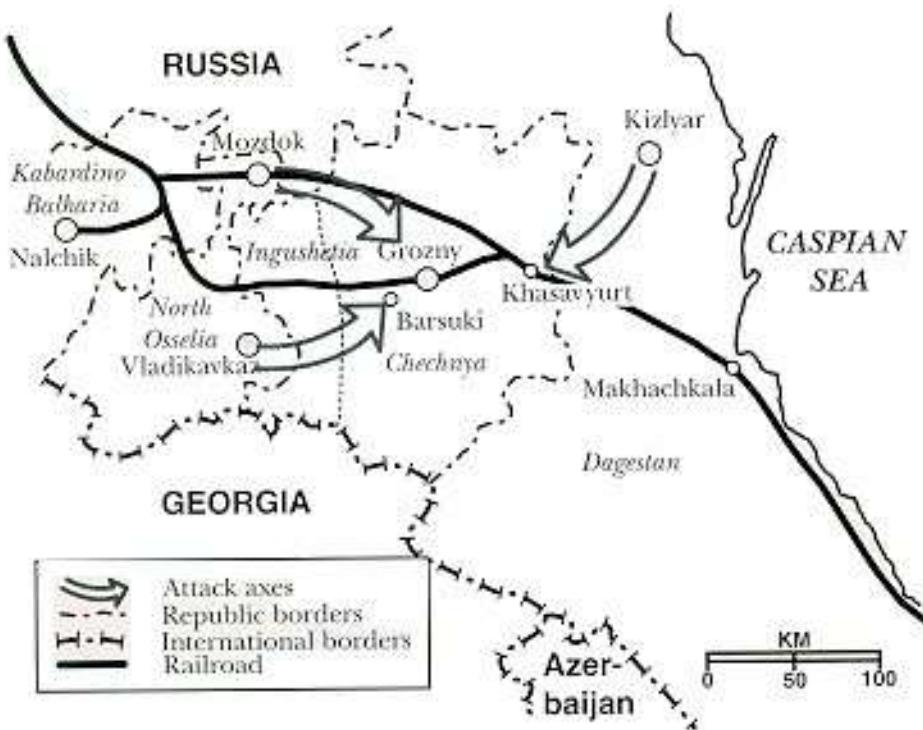
Russian urban war-fighting concepts were designed for fighting against another conventional army. The Chechen opposition were primarily guerrillas and irregulars backed by a small, fledgling regular force. The Chechens conducted a mobile "occasional" defense. They would hold one strong point one day and another on the next. The only exception was the Presidential Palace in the middle of the city which they defended continually. Therefore, the Russian Army would stockpile supplies and munitions for projected attacks, but the attacks would frequently fall on empty buildings (or worse, buildings full of civilians). The enemy had moved, sometimes to the rear of the advancing Russian Army. This made it very difficult to direct combat service support to the critical sector in time. The Russian Army wanted to fight a linear battle, but the Chechen opposition made them fight a nonlinear battle. The Russian logistics units were unprepared for this.

The Russian Army began the fight in the capital city of Grozny-a modern city of 490,000 people mostly living in concrete and brick high-rise apartment buildings (an area over 100 square miles). The city is served by a major rail line, airfield and is on a major highway net. Intercity movement relied on buses, trams, and private automobiles. Large factories and chemical plants competed with the oil industry for labor. A major oil and gas pipeline passes through the city. It is a difficult place for any army to begin a campaign.

Establishing the Theater Logistics Structure

The conscript-based Russian Army that entered the break-away Republic of Chechnya in December 1994 was not prepared for the fight. There was not a single combat-ready division in the entire Russian force structure. Their deployed force was a composite grouping of various units that were rapidly cobbled together. The logistics units were equally in bad shape and were hurriedly assembled for the effort.² To further complicate logistics support, the ground campaign against the city of Grozny was mounted on three separate axes-from the west, northwest and east.³ (Map) The fight for the city lasted one month and clean-up operations took another month. The city was left in ruins.

Still, the Russian military planners and transportation personnel did an excellent job in assembling the composite force from all over Russia. Almost all the force and supplies initially traveled on rail or aircraft. Since Chechnya is part of Russia, the logistics build-up was founded on the existing logistics infrastructure of the North Caucasus Military District. The majority of the



logistics support facilities and units were positioned near the Mozdok garrison. Mozdok has a good railhead and airfield and is located some 110 kilometers from Grozny. The Russian rear services built a tent city with some 3,000 heated tents, 114 mess halls, shower and bath units and vehicle wash points. The rear services also brought a shower and laundry train forward to Mozdok.⁴ Long-haul was by rail and air and soon depots, supply dumps and supply points were established at Mozdok extending toward Grozny. Three truck LOCs were established-one per main axis. Vehicle refueling points with rest stops containing mess tents and heating tents were set up along the LOCs.⁵ Trucks were essential to move supplies from the airfield and railhead forward toward Grozny.

Food Service

The fighting for Grozny began on New Years's Eve 1994. Chechnya is mountainous and the winters are cold and snowy. The planners decided to provide 150% of the normal ration to each soldier. This would exceed 5000 calories and included a daily 300 grams [10.5 ounces] of meat, 50 grams [1.75 ounces] of heavy cream and 30 grams [1.05 ounces] of cheese. Field bakeries were established on each of the main axes at Mozdok, Vladikavkaz and Kizlyar. Later, when the north Grozny airfield was captured, the Russians positioned three field bakeries there-with a daily capacity of eighteen tons of bread.⁶ There should have been plenty of food for every soldier.

However, the Russians had trouble delivering rations to the forward fighting positions. Meals were prepared on the KP-125 and KP-130 mess trailers. These are very serviceable cooking units which are hauled by the ZIL-130 or GAZ-66 trucks. However, when the ground around Grozny thawed, these trucks could not haul their mess trailers through the soupy mud. Then, the only

way to haul the mess trailers forward was behind fuel or water trucks. Fuel trucks could not enter the city, since a single bullet might set the entire vehicle ablaze, so mess trailers often got no further than the outskirts of the city. Therefore, the food had to be ladled into mermite-type containers, which were then loaded into armored personnel carriers for transport into the city.⁷ This absence of "hard log" transportation was a constant problem.

Often the troops at the forward positions had to eat dry rations.⁸ These dry rations did not provide the minimum daily required amount of calories or vitamins.⁹ Often, the troops that needed the extra calories the most were not even getting the minimum daily requirement. Thus, the initial plan to provide 5,000 calories per day went widely astray, primarily due to inadequate transport.¹⁰

High-demand Items:

Besides small arms ammunition, front-line infantry used copious amounts of hand

grenades, smoke grenades, smoke pots, demolition charges, flame thrower rounds, RPG-7 rounds and single-shot disposable antitank grenade launchers. Tear gas grenades were often required at certain points on the battlefield and had to be pushed forward. The front line infantry also had an immediate need for quantities of grappling hooks and ropes, light-weight ladders and night vision equipment. Many of these items were delivered by emergency airlift to Mozdok. Where there was a shortage of night-vision equipment, the Russians used mounted and dismounted searchlights to illuminate the battlefield and dazzle the Chechen opposition.¹¹

Mortars produced the most casualties on both sides and HE and smoke mortar ammunition was always in demand. Artillery was also used, often in a direct fire role. One-fifth of the artillery ammunition fired was smoke or white phosphorous-consequently these were high-demand items. Smoke screened infantry movement and white phosphorus smoke had the additional advantage (or disadvantage) of being lethal, capable of penetrating existing protective mask filters and not being banned by any international conventions.¹²

One of the most effective Russian weapons in city fighting was the venerable ZSU 23-4--a lightly-armored self-propelled antiaircraft gun whose four 23mm barrels spat out up to 3,200 rounds per minute. The elevation and deflection of the system, as with its modern equivalent, the 2S6, provided an excellent counter-gunner weapon for city fighting. However, keeping the ZSU 23-4 and the 2S6 in 23mm and 30mm ammunition was a constant problem.¹³

Clean drinking water was a high-demand item, but delivery of clean water forward often proved too difficult. Individual water treatment panticides took too long to work. Fighting is thirsty work and soldiers drank what was available. Viral hepatitis and cholera were the result.¹⁴



Cold breakfast before combat.

POL was critical as the Russians used over 200,000 tons of POL during the battle for Grozny. Captured POL stocks proved very useful to the Russian ground forces. A major problem was moving the POL stocks up close to the units in contact.¹⁵

Transportation Support

Primary heavy-lift long-haul into the theater was on rail. Railroad troops had to restore 260 kilometers of track, clear mines from another 70 kilometers, repair switches and restore electric power to electric rail lines. Trains had to be protected as they came under mortar, artillery and sniper fire.¹⁶

Air transport played a significant role in the long-haul of men and supplies. High demand items were almost always shipped by air. Practically the entire Russian Military Transport Aviation (VTA), plus some commercial aviation was involved in supporting the effort.

In theater, truck transport was essential. During the short preparation period (11-30 December 1994), 2,850 long-haul trucks supported the ground forces. Of these 90 had serious break-downs and 83 were written off as non-economically repairable. During the battle for Grozny, the long-haul truck requirement for ground forces increased to 6,700 trucks.¹⁷ Controlling all this traffic was a problem. The Russians had forgotten about their Afghanistan experience where the Soviet 40th Army had a traffic control brigade assigned to control convoys. Consequently, the Russians had to assemble an *ad hoc* traffic control brigade at the same time that they were conducting a major operation.¹⁸ Traffic control is just one example of where the lack of adequate time in the preparation phase can cripple the entire effort. Getting logistics in place and ready takes time. Political leaders did not give that time to the Russian Army.

The fighting in Grozny highlighted several problems. Supply trucks were soft-skinned, not rugged enough and could not be exposed to urban combat. One of the major problems supplying forward forces was that trucks could only go forward to a certain point. Then all the cargo had to be trans-loaded onto BTRs, MTLBs or other armored vehicles. The armored vehicles were not designed primarily for carrying cargo and had to make several trips to haul a single truck's load. This meant that the combat commander lost the use of many, if not most of his armored combat vehicles for combat. They were busy hauling ammunition, food and water or serving as ambulances. There was a chronic need for an armored supply vehicle which could move right up to the forces in contact.¹⁹

Connected with this problem was the lack of load carrying racks on the outside of Russian armored vehicles. Tents, sleeping bags, kit bags, squad stoves and the like were carried in the supply trucks. The trucks could not get forward and there was no place to carry soldiers' gear on



Writing a letter home during the fighting in Grozny.
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or in the armored vehicles. As a result, combatants had to do without individual gear for days at a time.

Rearming and refueling combat vehicles was particularly difficult. It usually had to be done at night. Rearming and refueling on site meant that lots of soldiers carried fuel cans and ammunition boxes forward-a long, arduous and hazardous process. Withdrawing vehicles, particularly tanks, to rearm and refuel is also difficult.²⁰ Forward-deployed troops did not always get the word that their supporting armor was being withdrawn only for rearming and refueling, sometimes misinterpreting a withdrawal of tanks as part of a general withdrawal.

Maintenance

Maintenance requirements exceeded expected maintenance norms for conventional combat during the two-month urban fight.²¹ Armored vehicle maintenance was especially critical and unit maintenance officers tried to keep control of their vehicles and repair as many vehicles as possible at regiment or brigade level. Still, during the two-month fight, forward support maintenance repaired some 217 armored vehicles, depot maintenance repaired some 404 armored vehicles and 225 vehicles were written off as being non-repairable. Thus some 846 of 2,221 armored vehicles involved in the fight (38%) were out of action for some period of time-although not simultaneously.²² Combined with the armored vehicles detailed for supply runs and medical evacuations, some combat commanders were lucky to have 40% of their armored vehicles present for combat.

In order to meet increased maintenance demands, the Russians formed three separate maintenance battalions and two maintenance detachments in addition to the deployed TO&E units.²³ The Russians established collection and repair points on each axis. In the west, the rear point was in Vladikavkaz while the forward was located near the trains of an airborne division. In the north, the rear point was in Mozdok while the forward was with the trains of a motorized rifle brigade. In the east, the Russians established three forward collection and repair points-with the trains of a motorized rifle division, an airborne regiment and a motorized rifle regiment.²⁴ During the month of January 1995, forward support and depot maintenance repaired 1,286 vehicles and returned them to their units. These included 404 armored vehicles, 789 wheeled vehicles and 75 artillery pieces. Maintenance personnel evacuated another 259 damaged armored vehicles from Grozny during January fighting. Due to the complexity of fire control systems, automatic reloading systems, electric systems and communications systems, 26% of some types of armored vehicles had to be repaired by factory representatives.²⁵

Combat damage and equipment failure was not the only maintenance problem. Money was not available to repair many vehicles prior to the war and so 646 "hanger queens" were shipped into the theater. All these 646 vehicles (338 wheeled vehicles, 217 armored vehicles and 41 artillery pieces) had to be repaired prior to the initiation of combat. Maintenance demands exceeded norms to such a degree that 573 tons of armored vehicle spare parts and accessories, 605 tons of wheeled vehicle spare parts and accessories and 60 tons of artillery spare parts and accessories had to be brought into theater to supplement the on-hand repair parts.²⁶ As a result of its poor performance and high fuel consumption during the fighting in Grozny, the Russian high command canceled production of the gas-turbine engine for the T-80 tank.²⁷

Medical Support

Russian Army care of the wounded was usually well planned and executed once the patient reached the battalion aid station. Three weeks prior to the Russian incursion, the Russian Army established and trained special emergency medical treatment detachments in each military district. Four of these detachments deployed to Chechnya to support the maneuver units and supplement their TO&E medical units.²⁸

The Russians utilized their normal conventional war evacuation system and usually employed ground medical evacuation as the quickest and safest form of evacuation. Each maneuver company was reinforced with a physician's assistant and each maneuver battalion had a medical doctor plus the ambulance section. Surgeons, anesthetists and additional nurses manned the regimental medical post.²⁹ Wounded were normally evacuated to the regimental medical post by make-shift armored ambulances (BTR-80), since the Chechens fired on the soft-sided ambulances. Forward medical stations and hospitals needed to be dug in or deployed in basements as the Chechens also shelled these. Patients requiring more extensive medical care were evacuated by MEDEVAC helicopter and MEDEVAC aircraft.³⁰ Forward air evacuation was not used much, particularly after the Chechens shot down several MEDEVAC helicopters. The fighting in Grozny proved the need for a specially-designed armored ambulance.³¹



Evacuation the wounded.

City fighting produced a different percentage of casualty types. Red Cross statistics for limited conflicts usually reflect 23% wounded from mines, 26% from bullets, 46% from shrapnel, 2% from burns and 3% miscellaneous. In the city fighting of Grozny, however, there was a higher percentage of burns and the majority of wounds were caused by mortar fire. The majority of those who were killed or died from wounds were hit in the head and chest by sniper fire (particularly among the civilians who did not have flak jackets and helmets). Whereas the normal ratio of wounded to killed is 3:1 or 4:1, this was reversed in the Grozny city fighting where three were killed for every wounded. [This ratio is probably skewed and reflects that many of the wounded could not be reached and given first aid in time. The actual initial ratio was probably closer to 2:1 wounded to killed.] Snipers presented a problem for medical evacuation and frequently the wounded could not be evacuated until night fall.³²

The Russian Army record in disease prevention was nowhere near as impressive as their handling of the wounded. Russian soldiers frequently lacked clean drinking water, clean clothing, hot rations and washing facilities. Personnel suffered from viral hepatitis, cholera, shigellosis, enterocolitis, diphtheria, malignant anthrax and plague. One combat brigade had 240 simultaneous cases of viral hepatitis. Since Russian field units were down to 60% strength or less at this time, a brigade would be lucky to muster 1,500 personnel. Over 15% of this one brigade was down with hepatitis. The brigade was combat ineffective due to disease and contaminated

water was the main culprit. Bacilli from the human intestinal tract were present in 60 to 80% of dishwater tested. Some 4% of the sick worked in food handling or water distribution.³³



Russian civilian, wounded in a mortar attack, is evacuated from a jelly factory.

surveyed were still capable of performing combat functions. The survey found that 28% were healthy and the other 72% had some type of psychological disorder (46% exhibited depression; a weak, apathetic or retarded motor state; or simple insomnia). Other disorders in the 46% included a lack of motivation, high anxiety, neuro-emotional stress, tiredness, and hypochondriacal fixation or panic attacks. The other 26% exhibited psychotic reactions such as high anxiety or aggressiveness, and a deterioration of moral values or interpersonal relations, excitement or acute depression. About 40% of the soldiers screened demonstrated a lack of neuro-psychological stability. The longer a soldier was stationed in the war zone, the more radical the change in his neuro-psychological condition. The percentage of troops with Post-Traumatic Stress Syndrome (PTSD) was higher than in Afghanistan-reflecting the impact of urban combat.³⁵

The Russians noted that they should have rotated units frequently to allow the soldiers to bathe, sleep, train and readjust. This would have required much larger reserves than were available and would create an additional logistics load. The Russians recommended that future urban combat include more psychiatric support-including professionals who would work forward in the units.³⁶

Prisoners and Detainees

Separating combatant from non-combatant was a difficult problem for the Russian armed forces. They began by simply examining suspects for bruises in the pocket of the shoulder to see if they had fired a weapon and looking for powder or burn marks on suspects' forearms and shirt cuffs. By the second month, the Russian internal troops resorted to a simpler method-rounding up most Chechen males and putting them in "filtration" camps. The camps were designed to identify and separate those Chechens who had possibly fought against the Russians from peaceful civilians. Prisoner gathering and maintaining filtration camps, run by the Ministry of Internal Affairs (MVD), required a considerable amount of vehicles, food, POL, water and security support-much of which apparently came from Ministry of Defense assets. The Russians were not prepared to handle the mass of prisoners. As a consequence, the prisoner situation was so

Psychiatric casualties are higher in urban combat. Most of the fighting in Chechnya was in cities (first in Grozny and then a succession of smaller cities and finally towns). A Russian military psychiatrist conducted a survey of 1,312 soldiers during the combat.³⁴ Soldiers

disordered that the International Red Cross had difficulty locating camps and found it impossible to trace individual prisoners.³⁷

Handing Off Support to Government and Non-Government Agencies

The Russian Armed Forces could not simultaneously fight and restore food delivery, sewers, water processing, public health and public services in the city. This task was eventually handled by the Ministry of Emergency Situations-EMERCOM. EMERCOM is the successor to the Soviet Union's civil defense organization. It is a rough equivalent to the US Federal Emergency Management Agency-FEMA.

EMERCOM managed to do a great deal to restore vital services to Grozny. The EMERCOM technical directorate dispatched their epidemic prevention service which monitored/inspected food supplies; performed bacteriological testing on the sick; conducted disinfection, disinfestation and rat control in the city; educated the public on health issues; and restored Chechnya's epidemiological and health centers. They also set up water distribution points at three hospitals; equipped three bathing facilities for patients and medical personnel; removed fallen debris and regular garbage; put three hospital cafeterias back in order; delivered medical and equipment and drugs; provided all hospitals with a fully-equipped ambulance; restored a maternity center; and provided 190 oil heaters.

EMERCOM technical services further restored more than 50 kilometers of high-voltage power lines; restored three heat and power plants; and set up eight diesel electric stations and repaired another. They restored 5331 meters of gas lines; delivered gas to 34 high-rise apartment buildings and 21 private buildings; and restored a gas distribution point in the center of Grozny. They set up a field bakery and delivered bread-making ingredients.

Finally, EMERCOM cleared mines from five water pumping and purification stations; performed engineer and medical reconnaissance of water sources; set up water collection stations on the Sunzha River; provided emergency repair to water and sewage systems, and restored 21 damaged segments on major waterlines on eleven streets. EMERCOM also inspected and tested Grozny's radioactive and chemical sites; testing fifteen dangerous inter-agency sites and exchanged NBC information with the Interior Ministry.³⁸

Beginning in January 1995, EMERCOM assisted U.N. agency assessment efforts to help displaced persons. As a result, the UN issued a "Flash Appeal" for immediate assistance in February. The appeal requested 25.1 million dollars for shelter, water, sanitation, food, health, community services, distressed children and support.³⁹ Expected donors included the U.N. High Commission on Refugees (UNHCR), the U.N. International Children's Emergency Fund (UNICEF), the World Food Program (WFP), the World Health Organization (WHO), and the International Migration Organization (IOM). Although all the requested aid was not given, these organizations eventually aided some 220,000 people (200,000 from Chechnya, and the rest from North Ossetia plus some from Georgia). Further, The International Red Cross distributed some 250,000 food packages monthly, established a soup kitchen in Grozny, reopened a hospital in Grozny and opened a "contact service" where people could apply to reestablish contact with lost relatives and friends.⁴⁰

Conclusion

The Russian Army was poorly prepared for combat in Grozny. It muddled through and even improved somewhat over time. However, the lessons learned from its combat are not limited to the Russian Army, but apply to any modern, mechanized force fighting a determined enemy in a city. The logistics lessons also apply. Urban combat will demand increased amounts of ammunition and special equipment, yet a major problem will be getting the supplies forward to where they are needed. There is a need for a rugged, armored supply/medical evacuation vehicle and a better way of rearming and refueling combat vehicles in the forward area.

There are no empty cities and the ground commander should conduct contingency planning in case he must care for the needs of the civilian population and restore critical services. The military commander may become the *defacto* city manager and should be prepared to keep the civilian populace alive and healthy, should this be required. To limit the time spent in this area, the commander should learn to work effectively with other government and non-government agencies. This means that a higher percentage of combat service support personnel may be needed before combat begins. Rail and air transport are critical to the logistics effort. Port and rail rehabilitation units may need to be among the first units into an urban theater.

Currently, logistics units in many armies are insufficiently staffed and equipped for urban combat. Urban combat greatly stresses ammunition, water, food and POL resupply. Maintenance demands greatly increase during urban combat. Vehicle evacuation/obstacle clearance will be an essential engineer/maintenance task. Factory representatives will need to accompany the force, additional maintenance units are needed and additional spare parts will need to be on hand prior to the initiation of combat. An aggressive screening program is required to keep "hanger queens" out of the theater.

Medical support will also require reinforcement and preventative medicine will play a major role in preserving the force as water-borne diseases are very dangerous to the well-being of the force. Mortar wounds, burns and psychiatric trauma increase dramatically in urban combat.

None of these are exclusively Russian problems and observations. Actually, the Russian logistics services performed reasonably well considering the monumental handicaps they had to overcome. The extensive logistics system designed in the Soviet era was no longer in place and the Russian Army did not have a viable replacement. Logisticians had just over a two-week build-up phase with no logistics rehearsals. [The Soviet Army conducted six major exercises to prepare for the invasion of Prague in 1968. Logistics rehearsals were an essential element of these exercises.⁴¹] The political masters gave the commanders no time to develop the theater, although there was no military reason to hurry. The logistics units were often composite units cobbled together on site. There were few habitual relationships among the participating staffs. Equipment was often broken on arrival. The logisticians were supporting a battle for which the planning norms were outdated. They were faced with the challenge of caring for a large civilian populace while other Government and non-Government agencies, which could help deal with this problem, were slow to arrive. Yet, Russian logisticians adapted to their shortcomings and provided adequate support under very trying circumstances. Other armies would be wise to study the difficulties they encountered and adjust accordingly.

ENDNOTES:

1. Martin Van Creveld, Supplying War: Logistics from Wallenstein to Patton, Cambridge: Cambridge University Press, 1986, 231.
2. The Russian logistics system was a direct descendant of the massive Soviet logistics system--a system which, to a large degree, depended on the immediate transfer of trucks and drivers and other material from the civilian economy to the military upon mobilization. Russian industry had privatized and civilian trucks and drivers were no longer available--yet new arrangements had not been enacted. The use of composite logistical units further disrupted the logistics system which was based on the premise that the higher echelon supplies the next two lower echelons. The echelons were no longer clearly defined and the staffs at each level had little or no experience working together. It was a recipe for logistics failure.
3. For a discussion of the battle for Grozny, see Timothy L. Thomas, "The Caucasus Conflict and Russian Security: The Russian Armed Forces Confront Chechnya. Military-Political Aspects and Military Activities, 11-31 December 1994", The Journal of Slavic Military Studies, Volume 8, Number 2 (June 1995), 233-256; "The Caucasus Conflict and Russian Security: The Russian Armed Forces Confront Chechnya. Military Activities 11-31 December 1994", The Journal of Slavic Military Studies, Volume 8, Number 2 (June 1995), 257-290; and "The Caucasus Conflict and Russian Security: The Russian Armed Forces Confront Chechnya. The Battle for Grozny, 1-26 January 1995", The Journal of Slavic Military Studies, Volume 10, Number 1 (March 1997), 50-108.
4. Mikhail Shchepakin, "Tyl v Chechne" [Rear Service in Chechnya], Armeyskiy sbornik [Army digest], June 1995, 20. Unfortunately, the front-line troops seldom were able to use the laundry and bath facilities. As a result, skin diseases and lice were a problem among combatants.
5. Ibid.
6. Shchepakin, 20-21.
7. Ibid, 21. A mermite container is a US Army insulated food container.
8. Dry rations are similar to the old US Army C-ration. There are three types of dry rations. The first contained a can of meat, some crackers or toast, some jam and a tea bag. The second contained two cans of meat mixed with oatmeal. The third contained a can of meat and a can of vegetables or fruit. Lester W. Grau, The Bear Went Over the Mountain: Soviet Combat Tactics in Afghanistan, London: Frank Cass Publishers, Inc, 1998, 5.
9. Lester W. Grau and Michael A. Gress, The Bear Looks Back: A Russian General Staff Retrospective on the War in Afghanistan, manuscript awaiting publication.
10. There have also been accusations that much of this food was diverted to the Russian black market.

11. Sergey Leonenko, "Ovladenie gorodom" [Capturing a city], Armeyskiy sbornik [Army digest], March 1995, 32.
12. Ibid, 33.
13. Vladimir Suzdal'tsev, "Chechenskie uroki voyskovoy PVO" [Air defense lessons from Chechnya], Armeyskiy sbornik [Army digest], September 1995, 23-24.
14. P. I. Ogarkov, V. V. Malyshev, S. A. Tsutsier, and N. V. Mikhaylov, "Epidemiologicheskaya kharakteristika i laboratomaya diagnostika virusnykh gepatitov v federal'nykh voyskakh na territorii chechenskoy respubliki" [Epidemiologic characteristics and laboratory diagnosis of viral hepatitis among federal forces deployed in the Chechen Republic], Voenno-meditsinskiy zhurnal' [Military-medical journal], August 1996, 48.
15. Pavel Gorupay, "Sluzhba goryuchego v Chechenskom krizise" [POL support in the Chechen crisis], Armeyskiy sbornik [Army digest], May 1995, 37.
16. Vadim Fedotov, "Magistral" [Magistral], Armeyskiy sbornik [Army digest], March 1995, 48-49.
17. Nikolay Kovalev, "Avtotekhnika v chechenskom konflikte" [Wheeled vehicles in the Chechen conflict], Armeyskiy sbornik [Army digest], March 1996, 62.
18. Valeriy Buravtsev, "Na voennyykh dorogakh" [On military roads], Armeyskiy sbornik [Army digest], April 1995, 40.
19. In the late 1980s, the Soviets designed a prototype armored supply truck, but it apparently was not produced in quantity before the collapse of the Soviet Union.
20. A good example from another war is Ali Ahmad Jalali and Lester W. Grau, The Other Side of the Mountain: Mujahideen Tactics in the Soviet-Afghan War, Quantico: US Marine Corps Study, 1998, 198-204.
21. The authors are unable to find any indication that the Russians had meaningful, contemporary logistics norms for urban combat. Their great urban battles of World War II (Stalingrad, Warsaw, Konigsberg, Budapest, Berlin) were fought primarily with foot infantry and little mechanized support. The mechanized forces were used to encircle the cities and fight on the city approaches.
22. Sergey Maev, "STO v Grozny" [Technical Maintenance Stations in Grozny], Armeyskiy sbornik [Army digest], December 1995, 58. For a look at the how the 225 armored vehicles were destroyed, see Lester W. Grau, "Russian-Manufactured Armored Vehicle Vulnerability in Urban Combat: The Chechnya Experience", Red Thrust Star, January 1997, 16-19.
23. Maev, 55.

24. Ibid.

25. Ibid, 58. Factory representatives were especially needed to repair the T-72 and T-80 tanks; the 2S1 SP 122mm and 2S19 152mm SP howitzers; the 2S5 SP 152mm gun and the 2S6 air defense system.

26. Ibid.

27. Mikhail Zakharchuk, "Uroki Chechenskogo krizisa" [Lessons of the Chechen crisis], Armeyskiy sbornik [Army digest], April 1995, 46.

28. N. N. Novichkov, V. Ya. Snegovskiy, A. G. Sokolov and V. Yu. Shvarev, Rossiyskie vooruzhennye sily b chechenskoim konflikte: analiz, itogi, vvvody [Russian armed forces in the Chechen conflict: analysis, results and outcomes], Moscow: Holweg-Infoglobe-Trivola, 1995, 131.

29. Ibid, 132.

30. Ibid, 134.

31. Yuri Savvin, "Za zhizni voinov" [For the lives of the warriors], Armeyskiy sbornik [Army digest], March 1995, 45.

32. Novichkov, 133. For further reading, see Lester W. Grau and William A. Jorgensen, "Handling the Wounded in a Counter-Guerrilla War: The Soviet/Russian Experience in Afghanistan and Chechnya", U.S. Army Medical Department Journal, January/February 1998, 2-10.

33. Lester W. Grau and William A. Jorgensen, "Viral Hepatitis and the Russian War in Chechnya", U.S. Army Medical Department Journal, May/June 1997, 2-5.

34. V.S. Novikov, "Psikhofiziologicheskoe obespechenie boevoy deyatel'nosti voennosluzhashchikh" [Psycho-physiological Support of Combat Activities of Military Personnel], Voenno-meditsinskiy zhurnal [Military Medical Journal], No. 4, April 1996, pp. 37-40.

35. Ibid., pp. 37, 38. The unanswered question is what were these soldiers like before combat? The Russian Army is a conscript army which draws from the segment of society not smart or connected enough to avoid conscription. An inordinate number of conscripts have dropped out from school, have criminal records and poor health. In many units, the Russian barracks environment is stressful with severe hazing and physical abuse viewed as a normal part of army life. Many of the Russian soldiers were probably "damaged goods" before they arrived in Grozny.

36. Ibid., p. 39.

37. Erik Reumann, "Red Cross Ready to Return", Passport, July/August 1996, 54. There are allegations of vile treatment and summary execution of prisoners by both sides. Both sides clearly committed gross violations of human rights.

38. All material in this section were the result of conversations between Mr. Thomas and the Public Affairs Office of EMERCOM.

39. "United Nations Consolidated Inter-Agency Appeal for Persons Displaced as a Result of the Emergency Situation in Chechnya," United Nations, March 1995, p. iii of the Executive Summary.

40. Reumann, 54.

41. Graham Turbiville, "Soviet Bloc Maneuvers", Military Review, August 1978, 19-35.